Remarks

This amendment is submitted to be fully responsive to the Office Action mailed June 5, 2006 and the interview with the examiner on June 20, 2006. With the entry of this amendment claims 1-7, 9-22 and 29-34 remain pending in the application. The specification has been amended at paragraph [0022] to correct a typographical error to change "solubility" to "insolubility" consistent with the language of the claims and the overall substance of the specification. Claims 9 and 14 are amended to improve the form of the recited Markush groups.

During the interview with the examiner an inconsistency was identified between paragraph [0022] (i.e., the word "solubility") and claim 1, line 11 (i.e., "insolubility"). After checking with the inventor, the term "solubility" in paragraph [0022] should be changed to "insolubility" so that the paragraph is consistent with the specification and claims.

Further, one of skill in the art would appreciate that the "copolymer monomer" [synonymously referred to as second monomer] decreases the solubility of a sulfonic or phosphinic acid derivative of equation (I) in water based not only on the identity of the copolymer monomers recited in paragraph [0022], but also the problem solved by the inclusion of a copolymer into the first polymer, namely that pure sulfonic acid or phosphonic acid polymers have such high water affinity that the resulting polymers tend to form gels. The specification notes that such gels are mechanically inadequate to be free-standing in paragraph [0021] that has been reproduced in relevant part below:

> Poly-AMPS and AMPS-containing copolymers have been used in ion-conducting electrolytes, particularly in electrochromic displays, as a viscous paste, tacky film, semi-solid gel and solid electrolyte film. Even in cases where solid films were prepared, they were usually formed by depositing the liquid polymer on the device and evaporating the solvent. In contrast, the present invention produces a free-standing film that can be repeatedly dried and rehydrated to contain a substantial amount of water (which is desired for ion conductivity), that also is rugged enough to be handled and processed, positioned, modified, cut, or shaped

> in the manufacture of a device. Because numerous acid containing monomers, including AMPS homopolymers, only yield gels, the present invention relies on extensive cross-linking or introduction of a copolymer to produce a suitable proton conductive polymer film. As used herein, "cross-linking" is defined to mean attachment of two chains of polymer molecules by bridge species which form a covalent linkage between the two chains. By choosing a suitable copolymer, and with cross-linking, it is possible to control methanol permeability, permitting its use in DMFCs.

As a result, Applicant submits that one of skill in the art would appreciate the nature of the typographical error in paragraph [0022] and correction thereof is submitted to add no new matter to the application.

In the outstanding Office Action, claims 1-7, 9-22 and 29-34 were rejected under 35 U.S.C. §112, first paragraph, in regard to support for the previous amendment to the claims and the added claims 29-34. Claim 1 was also rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Remarks Directed to Rejection under 35 U.S.C. §112, First Paragraph

Support for the previous amendment to claim 1 is found in paragraphs [0021] and [0022] of the specification as detailed above, as well the known solubility characteristics of polysulfonic acid polymers relative to polymers derived from the copolymer monomers recited in the application. The amendment to claim 9 involved replacing the previously deemed confusing term "copolymer monomer" with "second monomer". The basis for this amendment previously has been addressed in the record of this application. Support for new claim 29 is found in claims 1 and 7 as filed. Support for new claim 30 is found in claim 4 as originally filed. Support for new claim 31 is found in claim 5 as originally filed. Support for new claim 32 is found in claim 15 as originally filed. Support for new claim 33 is found in claim 12 as originally filed. Support for new claim 34 is found in claim 19 as originally filed.

In light of the above amendments and remarks, rejection of the outstanding claims under 35 U.S.C. §112, first paragraph, is believed to have been overcome and no remaining rejections exist with respect to the subject matter of claims 2-7, 9-22 and 29-34.

Remarks Directed to Rejection of Claim 1 under 35 U.S.C. §112, First Paragraph

The basis of this rejection is that it is unclear as to the nature of the relationship between the first and second polymers.

Independent claims 1 recites the language of "a second polymer polymerized independently of said first polymer and interpenetrating said first polymer...." Consistent with this language, the specification is submitted to convey to one of skill in the art the notion that an interpenetrating polymer network has two polymers which lack covalent linkages between the first and second polymers. While cross-linking may occur within either or both of the first and second polymers, no covalent linkages are present between first and second polymers as claimed.

In light of the above remarks, withdrawal of the rejection of claim 1 under 35 U.S.C. §112, second paragraph, as being indefinite is requested.

Summary

Claims 1-7, 9-22 and 29-34 are the claims pending in this application. Each claim is believed to be in allowable form and directed to patentable subject matter. Reconsideration and withdrawal of the rejections is solicited. Should the Examiner have any remaining issues, he is respectfully requested to contact the undersigned attorney in charge of this application to resolve any remaining issues.

Please charge the fee for this Amendment to the U.S. Patent Office Deposit Account number **19-2201** for the U.S. Army Materiel Command to cover the cost of the extension. Any deficiency or overpayment should be charged or credited to this numbered Deposit Account.

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